PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

Lewiston-Auburn Water Pollution Control Authority
Androscoggin County
Lewiston, Maine
A-1054-71-B-M

Departmental
Findings of Fact and Order
Air Emission License
Amendment #1/Minor Revision

FINDINGS OF FACT

After review of the air emissions license minor revision application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., §344 and §590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

The Lewiston-Auburn Water Pollution Control Authority (LAWPCA) was issued Air Emission License A-1054-71-A-N on June 1, 2011, permitting the operation of emission sources associated with a new anaerobic digester and cogeneration system at the wastewater treatment facility.

LAWPCA has requested a minor revision to the air emission license in order to clarify that the two cogeneration units will vent to individual stacks (rather than a common stack), to define the replacement timeframe for the iron sponge technology media used to control hydrogen sulfide (H_2S) from the anaerobic digesters, and to allow the use of other approved methods of grab sampling in place of Draeger Tubes.

This amendment also corrects a numeric error in the licensed allowed CO tons per year table (from 55.25 tons per year to 25.25 tons/year).

The equipment addressed in this license is located at 535 Lincoln Street in Lewiston, Maine.

B. Emission Equipment

The emissions equipment addressed in this minor revision include the H_2S iron sponge biogas treatment system and the two biogas/natural gas cogeneration units.

C. Application Classification

This amendment will not increase emissions of any pollutant. Therefore, this modification is determined to be a minor revision and has been processed as such.

II. MINOR REVISION DESCRIPTIONS

A. Background

The anaerobic digester and cogeneration system installed at LAWPCA is expected to start up in the spring of 2013. The system includes two municipal waste sludge anaerobic digesters, an H_2S removal system, and the two cogeneration units which fire the treated biogas to produce heat and power. There are also additional pieces of equipment at the facility, including two boilers and an emergency flare.

B. Cogeneration Units #1 and #2 Stacks

The two 230 kW cogeneration units are capable of firing biogas or natural gas. The units were previously licensed as having one common 17 foot stack; however, in the course of final design and construction, the units were built to vent into two individual stacks, at least 17 feet high.

Conditions (16)(C) and (16)(D) in air emission license A-1054-71-A-N both refer to a combined cogeneration stack. These conditions shall be revised to reflect the individual stacks.

C. H_2S Media Replacement Timeframe and Grab Sampling

LAWPCA has requested a minor revision to more clearly define the timeframe of when the media in the H_2S removal system is to be replaced. Sulfates occur naturally in wastewater through the decomposition of urine and protein in the influent sludge. In the digesters, H_2S and possible other reduced sulfur compounds are formed through the reduction of the sulfates by anaerobic bacteria. LAWPCA has installed an H_2S removal system, known as the iron sponge system that utilizes an iron-oxide impregnated wood chip media through which the biogas passes. A chemical reaction with the oxides effectively removes the hydrogen sulfide from the biogas and a stable iron sulfide compound remains on

the wood chips. The iron sponge media is housed in large corrosion resistant vessels and disposed of as non-hazardous waste.

Air emission license A-1054-71-A-N has the requirement to monitor the performance of the iron sponge media and replace it when breakthrough occurs. Condition (16)(F) of air emission license A-1054-71-A-N states:

> 16 (F) LAWPCA shall test a grab sample of biogas at the outlet of the iron sponge treatment unit for H_2S every month (Draeger Tube). The media in the iron sponge technology shall be replaced when the test results show breakthrough of H_2S (a detectable amount). Records shall be maintained of the grab sample results and dates of when the media is replaced. [06-096 CMR 115, BACT]

LAWPCA has requested clarification to condition 16(F) since, as written, it could be interpreted that media replacement would need to occur immediately upon breakthrough. The system is not yet operating, but it is expected that the media could last from 18 months to 5 years before needing replacement.

In order to allow for ordering, delivery, and actual replacement of the media, the language shall be clarified in Condition 16(F) to state that the iron sponge media shall be replaced within 30 days after test results show breakthrough of H_2S (5 ppm). LAWPCA has also requested the option to use a different grab method than the Draeger Tube, if approved.

D. Annual Emissions

The facility's annual emissions will not be changing with this minor revision. LAWPCA shall be restricted to the following annual emissions, calculated with the cogeneration units and boilers operating 8760 hrs/year, based on a 12 month rolling total:

Total Licensed Annual Emissions for the Facility *
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_x	CO	VOC
Cogeneration Units	0.98	0.98	0.18	11.91	23.83	2.76
Boilers	0.16	0.16	0.07	2.06	1.73	0.11
Total TPY	**1.14**	**1.14**	**0.25**	**13.97**	**25.56**	**2.87**

*Note: Tons per year calculations were based on a worst case scenario, as follows:

- generators and boilers firing 8760 hr/yr (the flare is not included since it will be operated when the generators and boilers are not functioning; the flare has the same or lower emissions as the other units),
- PM, SO_2, and VOC emissions were based on biogas firing and NO_X and CO were based on natural gas firing for the generators.
- PM, SO_2, NO_X, CO, and VOC emissions were all based on biogas firing for the boilers.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-1054-71-B-M subject to the conditions found in Air Emission License A-1054-71-A-N and in the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace conditions (16)(C), (16)(D) and (16)(F) in air emission license A-1054-71-A-N:

(16) Cogeneration Units

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C. Visible emissions from each cogeneration unit stack shall not exceed 10% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period. [06-096 CMR 101]

D. Each cogeneration unit stack shall be a minimum of 17 feet in height. [06-096 CMR 115, BACT]

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F. LAWPCA shall test a grab sample of biogas at the outlet of the iron sponge treatment unit for H_2S every month to monitor the performance of the iron sponge media, using a Draeger Tube or other method approved by the Department. The media in the iron sponge technology shall be replaced within 30 days after test results show breakthrough of H_2S (5 ppm). Records shall be maintained of the grab sample results and dates of when the media is replaced. [06-096 CMR 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 20 DAY OF May , 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-1054-71-A-N.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: March 6, 2013
Date of application acceptance: March 7, 2013

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.

Filed
MAY 20 2013
State of Maine
Board of Environmental Protection